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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,767	01/21/2004	John Ormond	10830.0108.NP	2871

27927 7590 03/03/2009

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EXAMINER	
NGUYEN, TOAN D	

ART UNIT	PAPER NUMBER
2416	

MAIL DATE	DELIVERY MODE
03/03/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/761,767	ORMOND, JOHN	
	Examiner	Art Unit	
	TOAN D. NGUYEN	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-43 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karpoff (US 7,299,290) in view of Asawa et al. (US 7,283,483).

For claims 1 and 11, Karpoff discloses method and system for providing multimedia information on demand over wide area network, the method comprising:

successively joining data packets from the time sequence into the frames (col. 12, lines 5-10), which includes:

(a) transmitting each frame in a first set of the frames upon filling said each frame in the first set of frames with data from one or more of the data packets so that said each frame in the first set of frames cannot contain an additional data packet (col. 12, lines 7-10); and

(b) transmitting each frame in a second set of the frames which are not filled with at least some of the data packets so that said each frame in the second set of the

frames cannot contain an additional data packet in order to ensure that said each data packet is transmitted in at least one of the frames (col. 12, lines 7-10).

However, Karpoff does not expressly disclose:

delaying transmission of some of the data packets so that at least some of the frames each contain multiple data packets, upon delaying packet transmission for the certain time interval, transmitting each data packet in at least one of the frames no later than a certain time interval after the respective time of said each data packet in the time sequence, and in order to ensure that said each data packet is transmitted in at least one of the frames no later than the certain time interval after the respective time of said each data packet in the time sequence.

In an analogous art, Asawa et al. disclose:

delaying transmission of some of the data packets so that at least some of the frames each contain multiple data packets (col. 1, lines 13-18), and upon delaying packet transmission for the certain time interval, transmitting each data packet in at least one of the frames no later than a certain time interval after the respective time of said each data packet in the time sequence, and in order to ensure that said each data packet is transmitted in at least one of the frames no later than the certain time interval after the respective time of said each data packet in the time sequence (figure 4, references 110, 112, 114, and 116, col. 5, lines 14-22).

Asawa et al. disclose transmitting the frames over a data network, measuring loading on the data network, and dynamically adjusting the duration of the certain time interval based on the measured loading of the data network, the duration of the certain

time interval being increased for increased loading on the data network (col. 5, lines 4-17 as set forth in claim 11).

One skilled in the art would have recognized the delaying transmission of some of the data packets so that at least some of the frames each contain multiple data packets, and would have applied Asawa et al.'s delay constraints in Karpoff's server 12. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Asawa et al.'s transmitting multiple packets in a frame in Karpoff's method and system for providing multimedia information on demand over wide area network with the motivation being determined the delay constrain for each packet (col. 4, lines 22-25).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Karpoff (US 7,299,290) in view of Asawa et al. (US 7,283,483) further in view of Smiroldo (US 6,847,653).

For claim 2, Karpoff discloses wherein a main routine for processing said each data packet initiates the transmitting of each frame in the first set of the frames upon filling said each frame in the first set of frames with data from one or more of the data packets so that said each frame in the first set of frames cannot, contain an additional data packet (col. 12, lines 7-10), the transmitting of each frame in the second set of the frames which are not filled with at least some of the data packets so that said each frame in the second set of the frames cannot contain an additional data packet in order to ensure that said each data packet is transmitted in at least one of the frames (col. 12, lines 7-10).

However, Karpoff does not expressly disclose said each data packet is transmitted in at least one of the frames no later than the certain time interval after the respective time of said each data packet in the time sequence. In an analogous art, Asawa et al. disclose said each data packet is transmitted in at least one of the frames no later than the certain time interval (col. 1, lines 13-18) after the respective time of said each data packet in the time sequence (figure 4, references 110, 112, 114, and 116, col. 5, lines 14-22).

One skilled in the art would have recognized said each data packet is transmitted in at least one of the frames no later than the certain time interval after the respective time of said each data packet in the time sequence, and would have applied Asawa et al.'s delay constraints in Karpoff's server 12. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Asawa et al.'s transmitting multiple packets in a frame in Karpoff's method and system for providing multimedia information on demand over wide area network with the motivation being determined the delay constrain for each packet (col. 4, lines 22-25).

Furthermore, Karpoff in view of Asawa et al. does not expressly disclose a timer interrupt routine. In an analogous art, Smiroldo discloses a timer interrupt routine (col. 9, lines 56-58).

One skilled in the art would have recognized the timer interrupt routine, and would have applied Smiroldo's timer in Karpoff's server 12. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Smiroldo's protocol for voice and data priority virtual channels in a wireless local area

networking system in Karpoff's method and system for providing multimedia information on demand over wide area network with the motivation being transmitted the frame when the timer goes off (col. 9, lines 57-58).

5. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karpoff (US 7,299,290) in view of Asawa et al. (US 7,283,483) further in view of Eguchi et al. (US 6,895,483).

For claims 3-4, Karpoff in view of Asawa et al. does not expressly disclose wherein the data packets include read I/O request data packets and write I/O request data packets, and the method includes separately joining the read I/O request data packets together for transmission, and separately joining the write I/O request data packets together for transmission, so that the I/O request data packets have an ordering in the frames that is different from the ordering of the I/O request data packets in the time sequence. In an analogous art, Eguchi et al. disclose wherein the data packets include read I/O request data packets and write I/O request data packets (col. 5, lines 22-25), and the method includes separately joining the read I/O request data packets together for transmission (col. 6, lines 5-9), and separately joining the write I/O request data packets together for transmission (col. 6, lines 5-9), so that the I/O request data packets have an ordering in the frames that is different from the ordering of the I/O request data packets in the time sequence (figure 4, col. 7, lines 48-50).

Eguchi et al. disclose wherein some of the read I/O request data packets are moved in front of some of the write I/O request data packets in some of the frames (col. 5, lines 24-25 as set forth in claim 4);

One skilled in the art would have recognized the wherein the data packets include read I/O request data packets and write I/O request data packets, and would have applied Eguchi et al.'s I/O network 140 in Karpoff's server 12. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Eguchi et al.'s method and apparatus for data relocation between storage subsystems in Karpoff's method and system for providing multimedia information on demand over wide area network with the motivation being to provide a transmission path for transferring an I/O command, read/write data, etc. between the storage subsystem 170 and the host system (col. 6, lines 5-7).

6. Claims 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karpoff (US 7,299,290) in view of Asawa et al. (US 7,283,483) further in view of Kodama et al. (US 7,460,473).

For claims 5-10, Karpoff in view of Asawa et al. does not expressly disclose wherein the data packets are I/O request data packets, and the method includes on-line transaction processing applications in a host processor producing the data packets, and a TCP/IP interface in the host processor transmitting the frames over an IP network to network attached storage containing a database accessed by the on-line transaction processing applications. In an analogous art, Kodama et al. disclose wherein the data packets are I/O request data packets, and the method includes on-line transaction processing applications in a host processor producing the data packets, and a TCP/IP interface (col. 3, lines 57-58) in the host processor transmitting the frames over an IP

network to network attached storage containing a database accessed by the on-line transaction processing applications (col. 16, line 1).

Kodama et al. disclose wherein the data packets are I/O replies from network attached storage, and the frames are transmitted to a host processor accessing the network attached storage (col. 20, lines 61-63 as set forth in claim 6); wherein the data packets are stored in a range of addresses of memory, a certain number of frames are preallocated in another region of memory, and the data packets are joined by transfer of the data packets from the range of addresses in memory to the preallocated frames in memory (col. 12, lines 12-18 as set forth in claim 7); wherein the certain number of preallocated frames are periodically updated (col. 12, lines 12-18 as set forth in claim 8); and which includes application threads loading the data packets into the memory at the range of addresses in memory (page 3, paragraph [0028] as set forth in claim 9); which includes TCP/IP threads accessing the pool of preallocated frames for transmission of the preallocated frames including the data packets over an IP network (col. 12, lines 1-5 as set forth in claim 10).

One skilled in the art would have recognized the wherein the data packets are I/O request data packets, and the method includes on-line transaction processing applications in a host processor producing the data packets, and a TCP/IP interface in the host processor transmitting the frames over an IP network to network attached storage containing a database accessed by the on-line transaction processing applications, and would have applied Kodama et al.'s iSCSI in Karpoff's server 12. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention, to use Kodama et al.'s network receive interface for high bandwidth hardware-accelerated packet processing in Karpoff's method and system for providing multimedia information on demand over wide area network with the motivation being applied to build a high speed iSCSI-based network-aatached storage system using various hard-ware base acceleration techniques (col. 3, lines 27-30).

7. Claim 12, 24, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karpoff (US 7,299,290) in view of Naik et al. (US 2004/0205206).

For claim 12, Karpoff discloses method and system for providing multimedia information on demand over wide area network, the method comprising a host processor programmed for executing transaction processing application and having a network block storage interface for accessing network attached storage coupled to the host processor via a data network (figure 7, col. 13, lines 5-11), the host processor joining data packets from different ones (MTU frame contain multiple packets joined together and placed it the frame means) of the transaction processing application in the same network transmission frames to more completely fill the network transmission frames (col. 12, lines 5-10).

However, Karpoff does not expressly disclose I/O request data packets, and on-line transaction processing applications. In an analogous art, Naik et al. disclose I/O request data packets (page 1, paragraph [0006], lines 3-4), and on-line transaction processing applications (page 1, paragraph [007], lines 4-7).

One skilled in the art would have recognized the I/O request data packets, and on-line transaction processing applications, and would have applied Naik et al.'s normal

on-line transaction processing in Karpoff's server 12. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Naik et al.'s system for managing and controlling storage access requirements in Karpoff's method and system for providing multimedia information on demand over wide area network with the motivation being to access the storage area network service (page 1, paragraph 0007], line 2).

For claim 24, Karpoff discloses method and system for providing multimedia information on demand over wide area network, the method comprising a host processor programmed for executing applications and having a network block storage interface for accessing network attached storage coupled to the host processor via a data network (figure 7, col. 13, lines 5-11), the performance problem being caused by network transmission frames being only partially filled data packets from the transaction processing applications, the performance problem being solved by re-programming the host processor to join the data packets from different ones of the transaction processing applications in the same network transmission frames to more completely fill the network transmission frames (col. 12, lines 5-10).

However, Karpoff does not expressly disclose I/O request data packets, and on-line transaction processing applications. In an analogous art, Naik et al. disclose I/O request data packets (page 1, paragraph [0006], lines 3-4), and on-line transaction processing applications (page 1, paragraph [007], lines 4-7).

One skilled in the art would have recognized the I/O request data packets, and on-line transaction processing applications, and would have applied Naik et al.'s normal

on-line transaction processing in Karpoff's server 12. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Naik et al.'s system for managing and controlling storage access requirements in Karpoff's method and system for providing multimedia information on demand over wide area network with the motivation being to access the storage area network service (page 1, paragraph 0007], line 2).

For claim 34, Karpoff discloses method and system for providing multimedia information on demand over wide area network, the method comprising a host processor programmed for executing transaction processing application and having a network block storage interface for accessing network attached storage coupled to the host processor via a data network (figure 7, col. 13, lines 5-11), the host processor joining data packets from different ones (MTU frame contain multiple packets joined together and placed it the frame means) of the transaction processing application in the same network transmission frames to more completely fill the network transmission frames (col. 12, lines 5-10).

However, Karpoff does not expressly disclose I/O request data packets, and on-line transaction processing applications. In an analogous art, Naik et al. disclose I/O request data packets (page 1, paragraph [0006], lines 3-4), and on-line transaction processing applications (page 1, paragraph [007], lines 4-7).

One skilled in the art would have recognized the I/O request data packets, and on-line transaction processing applications, and would have applied Naik et al.'s normal on-line transaction processing in Karpoff's server 12. Therefore, it would have been

obvious to one of ordinary skill in the art at the time of the invention, to use Naik et al.'s system for managing and controlling storage access requirements in Karpoff's method and system for providing multimedia information on demand over wide area network with the motivation being to access the storage area network service (page 1, paragraph 0007], line 2).

8. Claims 13-14, 25-26, and 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karpoff (US 7,299,290) in view of Naik et al. (US 2004/0205206) further in view of Asawa et al. (US 7,283,483).

For claims 13-14, 25-26, and 35-36, Karpoff in view of Naik et al. do not expressly disclose the host processor delaying transmission of some of the I/O request data packets by a certain time interval so that at least some of the network transmission frames each contain multiple I/O request data packets (col. 1, lines 13-18), and transmitting each I/O request data packet in a frame no later than a certain time interval after said each I/O request data packet is produced by one of the on-line transaction processing applications. In an analogous art, Asawa et al. disclose which includes the host processor delaying transmission of some of the I/O request data packets by a certain time interval so that at least some of the network transmission frames each contain multiple I/O request data packets, and transmitting each I/O request data packet in a frame no later than a certain time interval after said each I/O request data packet is produced by one of the on-line transaction processing applications (figure 4, references 110, 112, 114, and 116, col. 5, lines 14-22).

Asawa et al. disclose which includes the host processor dynamically adjusting the certain time interval in response to loading on the data network, the certain time interval being increased for increased loading on the data network (col. 5, lines 4-17 as set forth in claim 14); which includes re-programming the host processor to delay transmission of some of the I/O request data packets by a certain time interval so that at least some of the network transmission frames each contain multiple I/O request data packets, and to transmit each I/O request data packet in a frame no later than the certain time interval after said each I/O request data packet is produced by one of the on-line transaction processing applications (figure 4, references 110, 112, 114, and 116, col. 5, lines 14-22 as set forth in claim 25); which includes re-programming the host processor dynamically adjusting the certain time interval in response to loading on the data network, the certain time interval being increased for increased loading on the data network (col. 5, lines 4-17 as set forth in claim 26); which includes re-programming the host processor to delay transmission of some of the I/O request data packets by a certain time interval so that at least some of the network transmission frames each contain multiple I/O request data packets, and to transmit each I/O request data packet in a frame no later than the certain time interval after said each I/O request data packet is produced by one of the on-line transaction processing applications (figure 4, references 110, 112, 114, and 116, col. 5, lines 14-22 as set forth in claim 35); wherein the host processor is programming for dynamically adjusting the certain time interval in response to loading on the data network, the certain time interval being increased for increased loading on the data network (col. 5, lines 4-17 as set forth in claim 36).

One skilled in the art would have recognized the host processor delaying transmission of some of the I/O request data packets by a certain time interval so that at least some of the network transmission frames each contain multiple I/O request data packets, and transmitting each I/O request data packet in a frame no later than a certain time interval after said each I/O request data packet is produced by one of the on-line transaction processing applications, and would have applied Asawa et al.'s delay constraints in Karpoff's server 12. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Asawa et al.'s transmitting multiple packets in a frame in Karpoff's method and system for providing multimedia information on demand over wide area network with the motivation being determined the delay constrain for each packet (col. 4, lines 22-25).

9. Claims 15, 27, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karpoff (US 7,299,290) in view of Naik et al. (US 2004/0205206) and Smiroldo (US 6,847,653) further in view of Asawa et al. (US 7,283,483).

For claims 15, 27, and 37, Karpoff in view of Naik et al. does not expressly disclose which includes the host processor executing a periodic timer interrupt routine to insure that each I/O request data packet is transmitted in a frame no later than a certain time interval after said each I/O request data packet is produced by one of the on-line transaction processing applications. In an analogous art, Smiroldo discloses which includes the host processor executing a periodic timer interrupt routine to insure that each I/O request data packet is transmitted in a frame (col. 9, lines 56-58).

Smiroldo discloses which includes re-programming the host processor executing a periodic timer interrupt routine to insure that each I/O request data packet is transmitted in a frame (col. 9, lines 56-58 as set forth in claim 27); and wherein the host processor is programmed with a periodic timer interrupt routine to insure that each I/O request data packet is transmitted in a frame (col. 9, lines 56-58 as set forth in claim 37).

One skilled in the art would have recognized the host processor executing a periodic timer interrupt routine to insure that each I/O request data packet is transmitted in a frame, and would have applied Smiroldo's timer in Karpoff's server 12. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Smiroldo's protocol for voice and data priority virtual channels in a wireless local area networking system in Karpoff's method and system for providing multimedia information on demand over wide area network with the motivation being transmitted the frame when the timer goes off (col. 9, lines 57-58).

Furthermore, Karpoff in view of Naik et al. and Smiroldo does not expressly disclose that each I/O request data packet is transmitted in a frame no later than a certain time interval after said each I/O request data packet is produced by one of the on-line transaction processing applications. In an analogous art, Asawa et al. disclose that each I/O request data packet is transmitted in a frame no later than a certain time interval (col. 1, lines 13-18) after said each I/O request data packet is produced by one of the on-line transaction processing applications (figure 4, references 110, 112, 114, and 116, col. 5, lines 14-22).

One skilled in the art would have recognized the each I/O request data packet is transmitted in a frame no later than a certain time interval after said each I/O request data packet is produced by one of the on-line transaction processing applications, and would have applied Asawa et al.'s delay constraints in Karpoff's server 12. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Asawa et al.'s transmitting multiple packets in a frame in Karpoff's method and system for providing multimedia information on demand over wide area network with the motivation being determined the delay constrain for each packet (col. 4, lines 22-25).

10. Claims 16-19, 28-30, and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karpoff (US 7,299,290) in view of Naik et al. (US 2004/0205206) further in view of Eguchi et al. (US 6,895,483).

For claims 16-19, 28-30, and 38-40, Karpoff in view of Naik et al. does not expressly disclose wherein the I/O request data packets include read I/O request data packets and write I/O request data packets, and the method includes separately joining the read I/O request data packets together for transmission to the network block storage, and separately joining the write I/O request data packets together for transmission to the network block storage. In an analogous art, Eguchi et al. disclose wherein the I/O request data packets include read I/O request data packets and write I/O request data packets (col. 5, lines 22-25), and the method includes separately joining the read I/O request data packets together for transmission to the network block storage (col. 6, lines 5-9), and separately joining the write I/O request data packets (col.

6, lines 5-9) together for transmission to the network block storage (figure 4, col. 7, lines 48-50).

Eguchi et al. disclose which includes moving some of the read I/O request data packets in front of some of the write I/O request data packets in some of the frames (col. 5, lines 24-25 as set forth in claim 17); which includes turning on and off the joining of the I/O request data packets (col. 8, line 7 as set forth in claim 18); wherein the joining of the I/O request data packets is turned off during a bulk transfer of database data (col. 8, lines 9-10 as set forth in claim 19); wherein the I/O request data packets include read I/O request data packets and write I/O request data packets (col. 5, lines 22-25), and the method includes separately joining the read I/O request data packets together for transmission to the network block storage (col. 6, lines 5-9), and separately joining the write I/O request data packets (col. 6, lines 5-9) together for transmission to the network block storage (figure 4, col. 7, lines 48-50 as set forth in claim 28); wherein the host processor is reprogrammed to move some of the read I/O request data packets in front of some of the write I/O request data packets in some of the frames (col. 5, lines 24-25 as set forth in claim 29); which includes re-programming the host processor for turning on and off the joining of the I/O request data packets (col. 8, line 7 as set forth in claim 30); wherein the I/O request data packets include read I/O request data packets and write I/O request data packets (col. 5, lines 22-25), and the method includes separately joining the read I/O request data packets together for transmission to the network block storage (col. 6, lines 5-9), and separately joining the write I/O request data packets (col. 6, lines 5-9) together for transmission to the network block storage

(figure 4, col. 7, lines 48-50 as set forth in claim 38); which is programmed for moving some of the read I/O request data packets in front of some of the write I/O request data packets in some of the frames (col. 5, lines 24-25 as set forth in claim 39); and wherein the host processor is programmed for turning on and off the joining of the I/O request data packets (col. 8, line 7 as set forth in claim 40).

One skilled in the art would have recognized the wherein the data packets include read I/O request data packets and write I/O request data packets, and would have applied Eguchi et al.'s I/O network 140 in Karpoff's server 12. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Eguchi et al.'s method and apparatus for data relocation between storage subsystems in Karpoff's method and system for providing multimedia information on demand over wide area network with the motivation being to provide a transmission path for transferring an I/O command, read/write data, etc. between the storage subsystem 170 and the host system (col. 6, lines 5-7).

11. Claims 20-23, 31-33, and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karpoff (US 7,299,290) in view of Naik et al. (US 2004/0205206) further in view of Kodama et al. (US 7,460,473).

For claims 20-23, 31-33, and 41-43, Karpoff in view of Naik et al. does not expressly disclose which includes the host processor executing an I/O request bunching routine that intercepts I/O request data packets sent from the on-line transaction processing applications to a network block storage interface. In an analogous art, Kodama et al. disclose which includes the host processor executing an I/O request

bunching routine that intercepts I/O request data packets sent from the on-line transaction processing applications to a network block storage interface (col. 20, lines 61-63).

Kodama et al. disclose wherein the data packets are stored in a range of addresses of memory, a certain number of frames are preallocated in another region of memory, and the data packets are joined by transfer of the data packets from the range of addresses in memory to the preallocated frames in memory (col. 12, lines 12-18 as set forth in claim 21); which includes periodically updating the certain number of preallocated frames (col. 12, lines 12-18 as set forth in claim 22); which includes the network attached storage bunching I/O replies into frames for transmission from the network attached storage over the data network to the host processor (col. 20, lines 61-63 as set forth in claim 23); wherein the host processor is re-programmed by adding an I/O request bunching routine that intercepts I/O request data packets sent from the on-line transaction processing applications to a network block storage interface (col. 20, lines 61-63 as set forth in claim 31); wherein the host processor is re-programmed by modifying programming in the network block storage interface that packs the frames with the I/O request data packets (col. 20, lines 61-63 as set forth in claim 32); which includes re-programming the network attached storage to bunch I/O replies into frames for transmission from the network attached storage over the data network to the host processor (col. 20, lines 61-63 as set forth in claim 33); which includes the host processor executing an I/O request bunching routine that intercepts I/O request data packets sent from the on-line transaction processing applications to a network block

storage interface (col. 20, lines 61-63 as set forth in claim 41); wherein the host processor is programmed for storing the I/O request data packets in a range of addresses of memory, preallocating a certain number of frames in another region of memory, and joining the data packets during transfer the data packets from the range of addresses in memory to the preallocated frames in memory (col. 12, lines 12-18 as set forth in claim 42); and which is programmed for periodically updating the certain number of preallocated frames (col. 12, lines 12-18 as set forth in claim 43).

One skilled in the art would have recognized the wherein the data packets are I/O request data packets, and the method includes on-line transaction processing applications in a host processor producing the data packets, and a TCP/IP interface in the host processor transmitting the frames over an IP network to network attached storage containing a database accessed by the on-line transaction processing applications, and would have applied Kodama et al.'s iSCSI in Karpoff's server 12. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Kodama et al.'s network receive interface for high bandwidth hardware-accelerated packet processing in Karpoff's method and system for providing multimedia information on demand over wide area network with the motivation being applied to build a high speed iSCSI-based network-attached storage system using various hard-ware base acceleration techniques (col. 3, lines 27-30).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TOAN D. NGUYEN whose telephone number is (571)272-3153. The examiner can normally be reached on M-F (7:00AM-4:30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on 571-272-7872. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/T. D. N./
Examiner, Art Unit 2416

/William Trost/
Supervisory Patent Examiner, Art Unit 2416